CLAIMS

1. An in vivo surgical method of aspirating tissue from a patient comprising:

inserting an aspiration cannula through the patient's epidermis, so that a distal end of the cannula is positioned in close proximity to an area of tissue, the cannula being provided with a cannula lumen in communication with the cannula distal end;

transmitting air and fluid through a fluid and energy guide, the fluid and energy guide longitudinally extending within the cannula lumen;

generating atomized fluid particles in an interaction zone located in close proximity to the cannula distal end, using the air and fluid transmitted through the fluid and energy guide;

providing electromagnetic energy from an energy source to an electromagnetic energy transmitting means operatively mounted within the fluid and energy guide;

transmitting the electromagnetic energy from an output end of the energy transmitting means into the interaction zone, the electromagnetic energy having a wavelength which is substantially absorbed by a portion of atomized fluid particles in the interaction zone, the absorption of the electromagnetic energy by the portion of atomized fluid particles causing the portion of atomized fluid particles to expand and impart disruptive cutting forces onto the portion of the area of tissue in close proximity to the cannula distal end; and

providing a source of aspiration at a proximal end of the cannula to aspirate tissue debris through the cannula distal end and the cannula.

2. The method of claim 1, wherein the tissue comprises joint tissue.

3. The method of claim 1, wherein the tissue is located within the brain, the eye, the trachea or the abdomen.

4. The method of claim 1, wherein the cannula distal end is generally rounded or bullet-shaped to facilitate insertion into the patient's tissue with a minimum of localized tissue trauma.

5. The method of claim 1, wherein the laser energy source comprises an erbium, chromium, yttrium, scandium, gallium garnet (Er, Cr:YSGG) solid state laser.

6. The method of claim 1, wherein the laser energy source comprises a CO_2 laser.

7. The method of claim 1, wherein the fluid comprises water.

8. The method of claim 1, wherein the fluid comprises an anesthetic.

9. The method of claim 1, wherein the fluid comprises a saline solution.

10. The method of claim 1, wherein the fluid comprises epinephrine.

11. A tissue remover comprising:

an aspiration cannula having a cannula proximal end and a cannula distal end, the aspiration cannula being provided with a cannula lumen in communication with the cannula distal end, the cannula distal end being adapted to receive soft or hard tissue therein and into the cannula lumen;

a fluid and energy guide disposed within the aspiration cannula and longitudinally extending within the cannula lumen; the fluid and energy guide

transporting air and fluid to a distal end of the fluid and energy guide and being adapted to generate atomized fluid particles in an interaction zone located in close proximity to the distal end of the fluid and energy guide near the cannula distal end, the fluid and energy guide further providing electromagnetic energy from an energy source to an electromagnetic energy transmitting means operatively mounted within the fluid and energy guide, the electromagnetic energy having a wavelength which is substantially absorbed by a portion of atomized fluid particles in the interaction zone, the absorption of the electromagnetic energy by the portion of atomized fluid particles causing the portion of atomized fluid particles to expand and impart disruptive cutting forces onto soft tissue in close proximity with the cannula distal end; and.

a source of aspiration connected to a proximal end of the cannula, the source of aspiration being adapted to aspirate soft tissue through the cannula distal end and the cannula.

12. The tissue remover according to claim 8, wherein the laser energy source comprises an erbium, chromium, yttrium, scandium, gallium garnet (Er, Cr:YSGG) solid state laser.

13. The tissue remover according to claim 8, wherein the laser energy source comprises a CO_2 laser.

14. The tissue remover according to claim 8, wherein the aspiration cannula is formed of a medical grade plastic.

15. The tissue remover according to claim 8, wherein the aspiration cannula is formed of a stainless steel.

16. The tissue remover according to claim 8, wherein the laser energy transmitting means is a fiber optic delivery system.

17. The tissue remover according to claim 8, wherein the fluid comprises water.

18. The tissue remover according to claim 8, wherein the fluid comprises an anesthetic.

19. The tissue remover according to claim 8, wherein the fluid Comprises a saline solution.

20. The tissue remover according to claim 8, wherein the fluid comprises epinephrine.

21. The method of claim 1, wherein the tissue comprises cartilage or bone.

22. The method of claim 1, wherein the laser energy source comprises an Er:YAG laser.

23. The method of claim 1, wherein the fluid comprises epinephrine and an anesthetic.

24. The tissue remover according to claim 8, wherein the laser energy source comprises an ER:YAG laser.

25. The tissue remover according to claim 8, wherein the fluid comprises epinephrine an anesthetic.

26. A tissue remover comprising:

a tissue remover cannula having a cannula proximal end and a cannula distal end, the tissue remover cannula being provided with a cannula lumen in communication with the cannula distal end, the cannula distal end being adapted to receive soft or hard tissue therein and into the cannula lumen;

an imager disposed within the cannula lumen, the imager being adapted to provide an image to a user of an area in proximity to the cannula distal end;

a fluid and energy guide disposed within the tissue remover cannula, the fluid and energy guide transporting air and fluid to a distal end of the fluid and energy guide and being adapted to generate fluid particles in an interaction zone located in close proximity to the distal end of the fluid and energy guide near the cannula distal end, the fluid and energy guide further providing electromagnetic energy from an energy source to an electromagnetic energy transmitter within the fluid and energy guide, the electromagnetic energy having a wavelength which is substantially absorbed by a portion of fluid particles in the interaction zone, the absorption of the electromagnetic energy by the portion of fluid particles causing the portion of fluid particles to expand and impart disruptive cutting forces onto soft or hard tissue in close proximity with the cannula distal end; and.

a source of aspiration connected to a proximal end of the cannula, the source of aspiration being adapted to aspirate tissue debris through the cannula distal end and the cannula.